

CLAIMS

1. A nucleic acid construct comprising in the 5' to 3' direction of transcription,  
5 a promoter functional in a plant cell,  
a nucleic acid sequence that encodes an antibody or fragment thereof having the ability to bind to a transit peptide that directs a passenger protein associated with the transit peptide to an organelle of a plant cell, and  
10 a termination region functional in a plant cell.
2. A plant cell comprising a nucleic acid construct according to Claim 1.
- 15 3. A plant cell of Claim 2 that is a dicotyledon.
4. A plant cell of Claim 2 that is a monocotyledon.
5. A plant or progeny thereof derived from the plant  
20 cell of claim 2.
6. A maize plant of claim 5.
7. A maize plant of claim 6 wherein said transit  
25 peptide is the transit peptide for maize stearoyl-ACP  $\Delta$ -9 desaturase or maize palmitoyl-ACP thioesterase.
8. A method of decreasing the steady state level of a passenger protein in a plant cell which comprises placing  
30 a nucleic acid construct of claim 1 in the plant cell.
9. The method of Claim 8 wherein said organelle is selected from the group consisting of chloroplast, amyloplast, chromoplast, leucoplast, mitochondria, and  
35 the nucleus.

10. The method of Claim 8 wherein said antibody or fragment thereof is a single chain antibody molecule.

11. The method of Claim 8 wherein said epitope comprises at least 6 amino acids, said amino acids being continuously adjacent to each other in said transit peptide.

12. A plant cell wherein the steady state level of a passenger protein found therein has been decreased by the method of Claim 8.

13. A plant or progeny thereof derived from a plant cell of claim 12.

14. A monoclonal antibody that specifically binds to an epitope found in maize stearyl-ACP  $\Delta$ -9 desaturase.

15. A monoclonal antibody of claim 14 that specifically binds to an epitope found in the polypeptide of SEQ ID NO:15.

16. An antibody of Claim 15 produced by 10E10, having ATTC Designation HB-12544.

17. A hybridoma cell line designated 10E10, having ATTC Designation HB-12544.

18. A monoclonal antibody that specifically binds to an epitope found in the maize palmitoyl-ACP thioesterase transit peptide.

19. A monoclonal antibody of claim 18 that specifically binds to an epitope found in SEQ ID NO:56.

20. The nucleic acid construct of Claim 1 wherein said nucleic acid sequence is selected from the group consisting of SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:31, SEQ ID NO:43, and SEQ ID NO:48.

21. An isolated nucleic acid fragment selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50 and SEQ ID NO:51.

22. A polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, and SEQ ID NO:32.

23. An isolated nucleic acid encoding an protein having an amino acid sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, and SEQ ID NO:32.